

Date: Friday, 7/20/2007 10:19:49 AM  
User: Kim Johnston

# Process Sheet

Customer : CU-DAR001 Dart Helicopters Services	Drawing Name : 02.250 SUPPORT
Job Number : 33693	
Estimate Number : 11057	
P.O. Number : <i>N/A</i>	Part Number : D28911
This Issue : 7/20/2007 S.O. No. : <i>N/A</i>	Drawing Number : D2891 REV A1
Prsht Rev. : NC	Project Number : N/A
First Issue : <i>N/A</i> Type : PURCHASED PARTS	Drawing Revision : A1
Previous Run : 32373	Material : <i>N/A</i>
Written By : <i>[Signature]</i>	Due Date : 8/20/2007 Qty: 8 Um: Each
Checked & Approved By : <i>[Signature]</i>	
Comment : Est. 02.11.26 Added P/O KJ	

## Additional Product

Job Number:



Seq. #:	Machine Or Operation:	Description :
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1.0	PG	PURCHASING
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Comment: PURCHASING

Issue P/O: *4238*

Description: D6104-003

Material: 17-4 PH SS (AMS 5643 OR AISI 630) as per Dwg D6104

Material release note required.

Blank size makes (2) D2891-1

*07/07/20 (8)*

2.0	D6104003	17-4 SS Roundbar 3.25"OD
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Comment: Qty.: 1.0000 Each(s)/Unit Total : 8.0000 Each(s)  
Support 2.25 dia

3.0	PACKAGING 1	PACKAGING RESOURCE #1
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Comment: PACKAGING RESOURCE #1

Recieve & Inspect for Transit Damage

Ensure Material Release Note is attached

*7/7/30 SP*

4.0	MORI SEIKI	MORI SEIKI CNC LATHE LARGE
-----	------------	----------------------------



Comment: MORI SEIKI LATHE

Turn blank for Haas as per Folio FA046

*SP 07/08/07*

5.0	QC1	INSPECT ALL DIM TO DIM SHEET
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Comment: INSPECT ALL DIM TO DIM SHEET

*SP 07/08/07*

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes ☒ No ☐ DQA: 2 Date: 01/08/30

QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

Date: Friday, 7/20/2007 10:19:49 AM  
User: Kim Johnston

## Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: 02.250 SUPPORT

Job Number: 33693

Part Number: D28911

Job Number:



Seq. #:

Machine Or Operation:

Description :

6.0

HAAS1

HAAS CNC VERTICAL MACHINING #1



Comment: HAAS

Machine as per Folio FA046

Tumble & Deburr

*m.l/BG 07/08/23*

8

7.0

QC2

INSPECT PARTS AS THEY COME OFF MACHINE



Comment: INSPECT PARTS AS THEY COME OFF MACHINE

*m.l 07/08/23*

(8)

8.0

QC8

SECOND CHECK



Comment: SECOND CHECK

*2.3 07/08/26*

(8)

9.0

POWDER COATING

POWDER COATING



*M 105068*



(8X)

Comment: POWDER COATING

Powder Coat White Gloss (Ref: 4.3.5.2) as per QSI 005 4.3

*m.l 07/08/29*

10.0

QC3

INSPECT POWDER COAT/CHEMICAL CONVERSION



Comment: INSPECT POWDER COAT/CHEMICAL CONVERSION

*7/8/29*

(8X)

11.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Identify and Stock

Location: \_\_\_\_\_

*7/8/29 SP*

(8X)

12.0

QC21

FINAL INSPECTION/W/O RELEASE



Comment: FINAL INSPECTION/W/O RELEASE

*N 07/08/30*

Job Completion



*u 07/08/30*

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

<b>DART AEROSPACE LTD</b>	<b>Work Order:</b>	33693
<b>Description: Ø2.250 Support</b>	<b>Part Number:</b>	D2891-1
<b>Inspection Dwg: D2891 Rev. A1</b>		Page 1 of 1

Inspect dimensions highlighted on inspection sheet drawing D2891 Rev.A1/DSK076 Rev.A and record below:

				Recorded Actual Dimensions					
Dim	Min	Max	Go/No Go Gauge	1	2	3	4	By	Date
Lathe Section									
A	2.274	2.279		2.277	2.276	2.278	2.278		
B	3.702	3.722		3.711	3.711	3.712	3.714		
C	2.564	2.584		2.575	2.573	2.573	2.573		
D	0.718	0.738		.729	.729	.728	.730		
E	0.090	0.110		.101	.102	.101	.101		
F	2.464	2.484		2.473	2.473	2.473	2.473		
G	2.029	2.049		2.037	2.037	2.037	2.037		
H	2.964	2.984		2.973	2.972	2.972	2.970		
I	0.913	0.933		.928	.929	.929	.929		
J	0.022	0.042		.032	.032	.032	.032		
K	0.090	0.110		.100	.100	.100	.100		
L									
HAAS Section									
AA	0.188	0.193	DT8706	.188	.188	.188	.188		
AB	0.240	0.260		.257	.257	.257	.257		
AC	0.115	0.150		.145	.145	.145	.145		
AD	0.040	0.060		.050	.050	.050	.050		
AE	0.010	0.020		.015	.015	.015	.015		
AF	0.240	0.260		.250	.250	.250	.250		
AG	0.290	0.310		.300	.300	.300	.300		
AH	0.115	0.150		.135	.135	.135	.135		
AI	0.454	0.474		.470	.470	.470	.470		
AJ	2.779	2.789		2.785	2.785	2.785	2.785		
AK	0.240	0.260		.258	.258	.258	.258		
AL	1.002	1.042		1.040	1.040	1.040	1.040		
AM	0.053	0.073		.063	.063	.063	.063		
AN	0.257	0.262	DT8683	.257	.257	.257	.257		
AO	1.663	1.683		1.673	1.673	1.673	1.673		
AP	0.053	0.073		.063	.063	.063	.063		
AQ	0.022	0.042		.032	.032	.032	.032		
AR									
AS									
Accept/Reject									

Measured by: <u>RF 136</u>	Audited by: <u>SA</u>
Date: <u>07/08/07</u>	Date: <u>01.08.22</u>

Rev	Date	Change	Revised by	Approved
A	02.12.12	New Issue	KJ/RF	#

<b>DART AEROSPACE LTD</b>	<b>Work Order:</b> 33693
<b>Description:</b> Ø2.250 Support	<b>Part Number:</b> D2891-1
<b>Inspection Dwg:</b> D2891 Rev. A1	<b>Page 1 of 1</b>

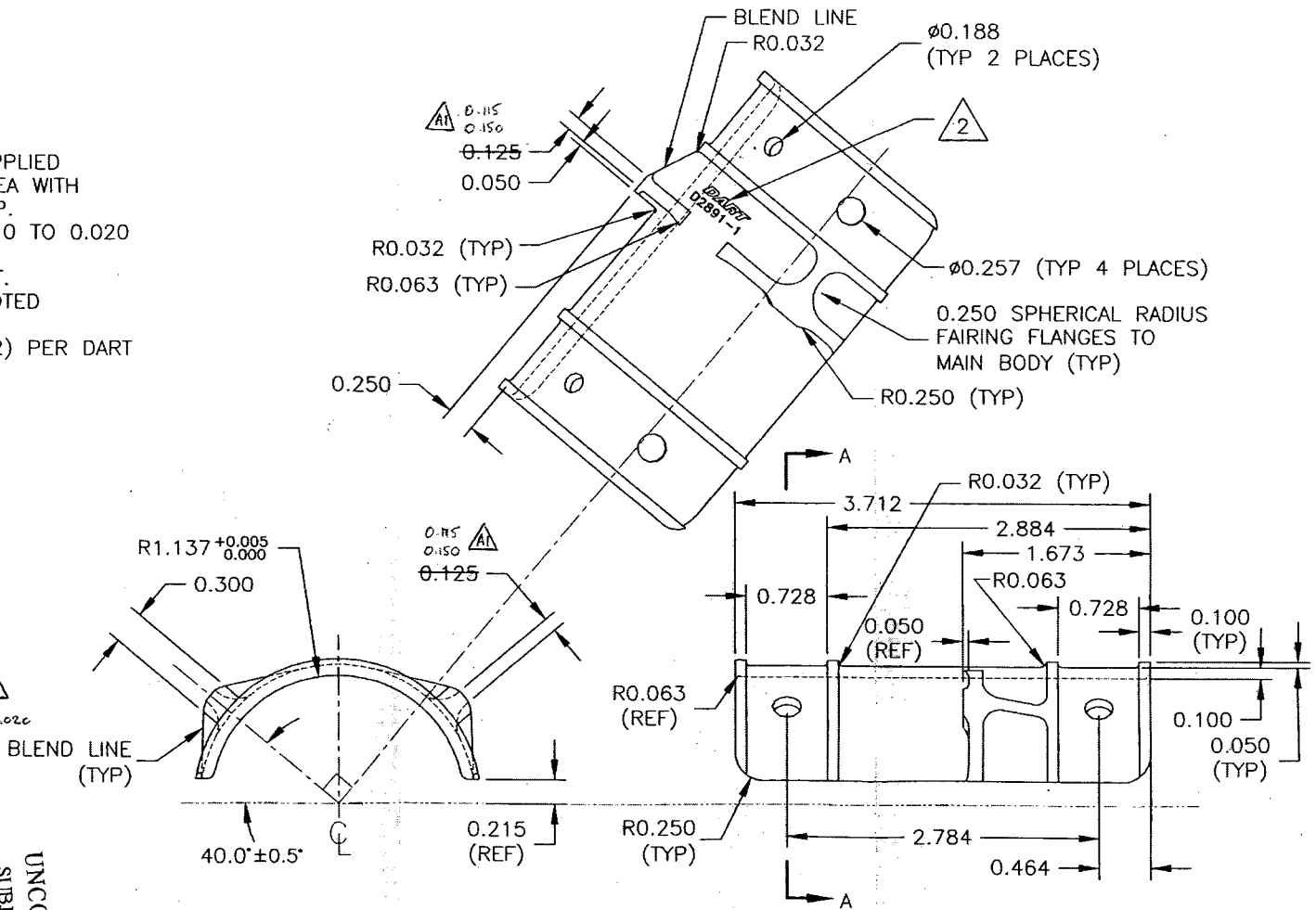
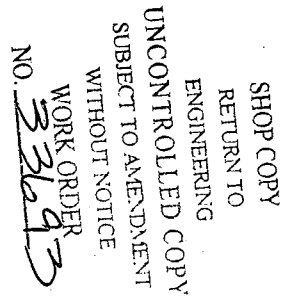
Inspect dimensions highlighted on inspection sheet drawing D2891 Rev.A1/DSK076 Rev.A and record below:



				Recorded Actual Dimensions					
Dim	Min	Max	Go/No Go Gauge	5	6	7	8	By	Date
Lathe Section									
A	2.274	2.279		2.278	2.277	2.278	2.276		
B	3.702	3.722		3.711	3.712	3.709	3.708		
C	2.564	2.584		2.574	2.574	2.574	2.574		
D	0.718	0.738		.727	.728	.729	.728		
E	0.090	0.110		.102	.102	.102	.102		
F	2.464	2.484		2.474	2.474	2.473	2.474		
G	2.029	2.049		2.039	2.039	2.039	2.039		
H	2.964	2.984		2.973	2.972	2.972	2.974		
I	0.913	0.933		.929	.930	.928	.933		
J	0.022	0.042		.032	.032	.032	.032		
K	0.090	0.110		.100	.100	.100	.090		
L									
HAAS Section									
AA	0.188	0.193	DT8706	0.188	0.188	0.188	0.188		
AB	0.240	0.260		0.248	0.253	0.247	0.250		
AC	0.115	0.150		0.127	0.128	0.127	0.127		
AD	0.040	0.060		0.047	0.048	0.050	0.053		
AE	0.010	0.020		0.010	0.010	0.010	0.010		
AF	0.240	0.260		0.250	0.250	0.250	0.250		
AG	0.290	0.310		0.303	0.305	0.306	0.306		
AH	0.115	0.150		0.140	0.140	0.140	0.140		
AI	0.454	0.474		0.464	0.461	0.456	0.454		
AJ	2.779	2.789		2.781	2.783	2.783	2.785		
AK	0.240	0.260		0.250	0.250	0.250	0.250		
AL	1.002	1.042		1.040	1.040	1.040	1.040		
AM	0.053	0.073		0.063	0.063	0.063	0.063		
AN	0.257	0.262	DT8683	0.258	0.258	0.258	0.258		
AO	1.663	1.683		1.675	1.675	1.675	1.675		
AP	0.053	0.073		0.063	0.063	0.063	0.063		
AQ	0.022	0.042		0.032	0.032	0.032	0.032		
AR									
AS									
Accept/Reject									

Measured by: J.F. 19ml	Audited by: S
Date: 07/06/07 07/08/23	Date:

Rev	Date	Change	Revised by	Approved
A	02.12.12	New Issue	KJ/RF	#

- 1) MATERIAL: 17-4 PH STAINLESS STEEL  
HEAT TREAT TO H900 CONDITION  
(900°F FOR 1 HR, AIR COOL)  
MIN UTS = 170 KSI (38 HRC)
- 2) IDENTIFY WITH DART LOGO (PER DART SUPPLIED GRAPHIC) AND PART NUMBER IN THIS AREA WITH 0.125 HIGH LETTERING 0.010-0.020 DEEP.
- 3) BREAK ALL UNMARKED SHARP EDGES 0.010 TO 0.020
- 4) PART IS SYMMETRIC ABOUT CENTERLINE
- 5) TOLERANCES ARE PER DART QSI 018 (REF. X.XXX =  $\pm 0.010$ ) UNLESS OTHERWISE NOTED
- 6) ALL DIMENSIONS ARE IN INCHES
- 7) FINISH: POWDER COAT WHITE (REF. 4.3.5.2) PER DART QSI 005 4.3

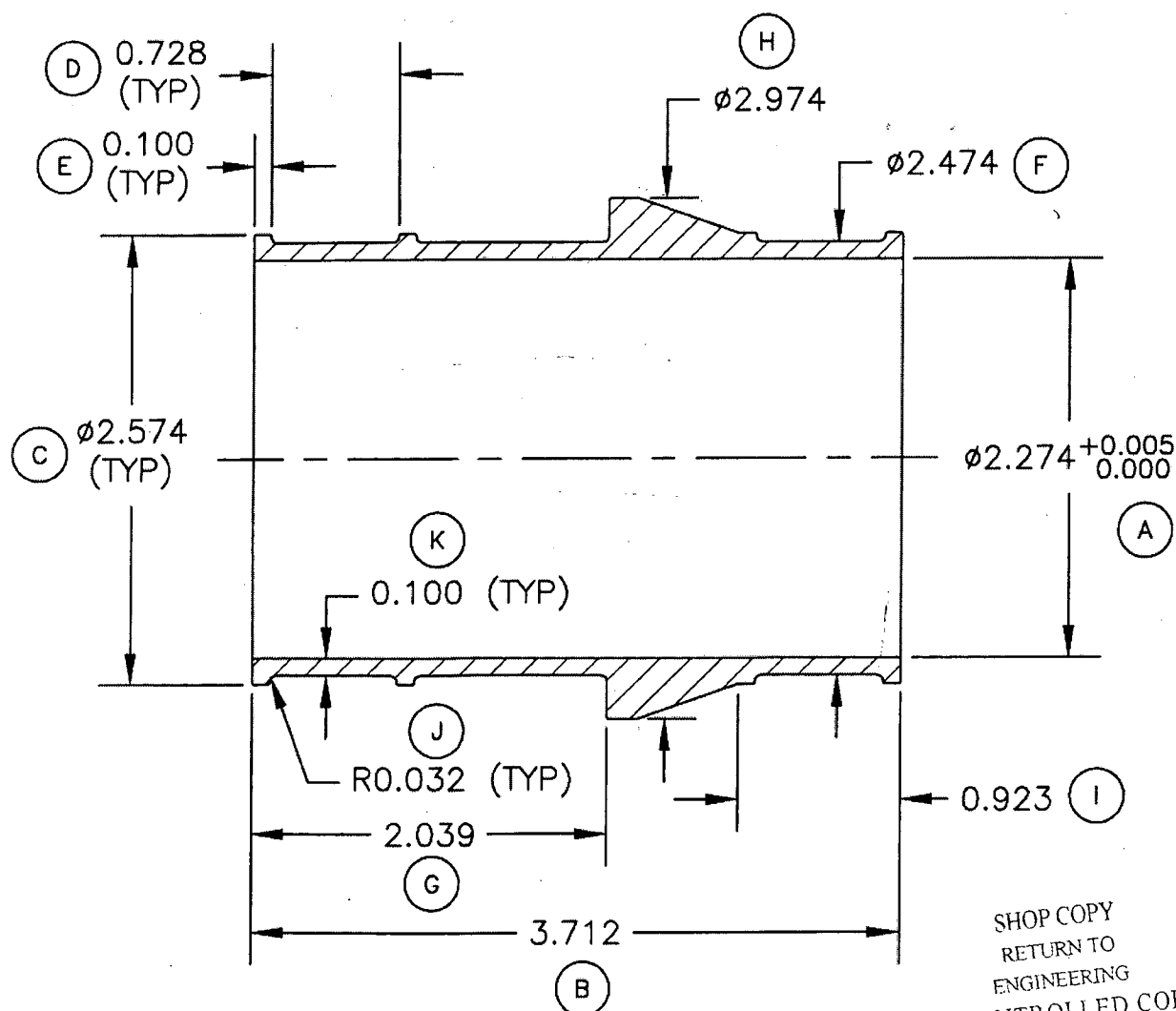


AI	<del>CP</del> 02.01.23	UPDATE DIMS AS MANUFACTURED	
A	00.11.17	NEW ISSUE	
DESIGN	<del>CP</del>	<del>CP</del>	 <b>DART</b> WAINESBURY, ONTARIO, CANADA
CHECKED	<del>CP</del>	APPROVED	
DATE	00.11.17	DRAWING NO.	REV. A
		D2891	SHEET 1 OF 1
		TITLE	SCALE
		Ø2.250 SUPPORT	1:1

**DART**

DESIGN [Signature]	DRAWN BY [Signature]	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED [Signature]	APPROVED [Signature]	DRAWING NO. DSK 076	REV. A SHEET 1 OF 1
DATE 03.05.20		TITLE TURNING DETAIL FOR D2891-1	SCALE 1:1
A	03.05.20	NEW ISSUE	

RELEASED  
03.07.01 [Signature]



D2891-1 TURNING DETAIL

SHOP COPY  
RETURN TO  
ENGINEERING  
UNCONTROLLED COPY  
SUBJECT TO AMENDMENT  
WITHOUT NOTICE  
WORK ORDER  
NO. 33693

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05/17/2004 MON 16:10 FAX --- IMAGEMAX

010/040

SYRACUSE  
NEW YORK 13201

## CERTIFICATE OF TEST

A M CASTLE, INC

SHIP  
TO

A M CASTLE, INC

3400 N WOLF RD

6501 BINGLE STREET

FRANKLIN PARK, IL 60131

HOUSTON, TX 77092

03

OUR ORDER NO.  
PS-14995-3-01DATE  
04/30/04

CUSTOMER ORDER # &amp; DATE

21-22145

CUSTOMER REQ. #

DISTRICT

B PARSONS

SHIPPED  
FROM

SYRACUSE

DESCRIPTION OF MATERIAL

CRU 1" CR 4NI RTA IAC 42470

SIZE

3.250 RD

3174-10 REV 4 ASME-SA564-98ED T630

ASTM-A564-02 T630

AMS-5643Q (EX SURFACE) AISI 630 UNS #S17400

HEAT NO.

CHEMICAL ANALYSIS

A15389

C	MN	P	S	SI	NI	CR	MO	CU	CO	TA
.047	.63	.025	.021	.35	4.16	15.20	.094	3.23	.29	.010

CASTLE METALS HOU

DATE REC'D 5-13-04

REC'D FROM Crucible

IAC 42470 RD 33P43

APPROVED BY JA

QUANTITY

HEAT NO.

MECHANICAL PROPERTIES

QUANTITY	HEAT NO.	TENSILE PSI	YLD.2%PSI	ELONG2IN	RED/AREA%	HARDNESS BHN 348
2021 #	A15389	195,980	172,890	13.6	50.0	BHN 388

CAPABILITY PHYSICALS AFTER 900 DEG. F. - 1 HR. AIRCOOL:

MACRO TEST OK

FERRITE 5 %

MAGNAFLUX F/S = 0/0

REDUCTION RATIO: 27.5:1

ELECTRIC FURNACE ADD MELTED

MATERIAL SOLUTION TREATED AT 1900 DEG. F. HELD 45 MINUTES

AT TEMPERATURE -

AIRCOOLED.

CRUCIBLE MATERIALS CORP. VENDOR #18610.

MATERIAL INGOT CAST.

NAFTA - YES

MATERIAL FREE FROM MERCURY CONTAMINATION AT TIME OF SHIPMENT  
NO WELD REPAIR PERFORMED  
MATERIAL MELTED IN U.S.A.

THANK YOU FOR SELECTING A QUALITY PRODUCT  
MANUFACTURED BY THE EMPLOYEES OF CRUCIBLE SPECIALTY METALS JU

SWORN TO AND SUBSCRIBED BEFORE ME THIS

DAY OF . 20

NOTARY PUBLIC

CERTIFIED  
BY:

THE ABOVE MATERIAL WAS MANUFACTURED AND TESTED IN ACCORDANCE  
WITH ABOVE SPECIFICATIONS AND IS IN CONFORMANCE WITH THOSE  
SPECIFICATION REQUIREMENTS.

CRUCIBLE MATERIALS CORPORATION  
NOTARY BY AND THROUGH ITS SPECIALTY METALS DIVISION

QUALITY ASSURANCE REPRESENTATIVE

JACKIE L WHITE - SPECIFICATION EXAMINER

100-100000

100-100000